

BEIS REVIEW OF WHIRLPOOL'S TUMBLE DRYER MODIFICATION PROGRAMME

Background

During 2015 Whirlpool Corporation became aware of a safety issue affecting over 5 million of its tumble dryers manufactured and sold within the UK. Whirlpool concluded that the issue involved the risk that lint could accumulate in excessive quantities around the rear drum seal, fall onto the heater, ignite and cause a fire.

As with the approach taken in many automotive recalls, Whirlpool designed a technical modification to address this issue. This modification was applied as part of the manufacturing process and in September 2015 Whirlpool began a call to consumers to take up the modification to their existing machines. This included direct contact to consumers known to have purchased an affected product.

Concerns were raised about the adequacy of Whirlpool's response and the effectiveness of the modification programme. In May 2018 the Minister for Small Business, Consumers and Corporate Responsibility asked the Office for Product Safety and Standards (OPSS) to undertake a review of the action taken by Whirlpool.

Aims of the Review

The aim of the review was to form a judgement on the effectiveness and adequacy of the action taken by Whirlpool Corporation within the UK to address the risk of fires arising specifically from excessive lint build-up on the rear seal of its tumble dryers. The two key questions considered were:

- a. Is Whirlpool's technical modification, designed to reduce the risk of fires arising from its tumble dryers, effective in both design and installation?
- b. Is Whirlpool's consumer outreach programme adequate?

Details of the Review

The review comprised the following elements:

- a. Engineering review of the effectiveness of the modification.
- b. Review of the modification installation process.
- c. Collection and analysis of fire incident data to inform a risk assessment.
- d. Review of the customer outreach programme
- e. Mystery shopper exercise to review the advice provided to consumers by retailers and Whirlpool.

Engineering review of the modification

A fire and explosion scientist reviewed the evidence provided by Whirlpool on the modification and agreed that excessive lint accumulation on the rear drum seal of affected tumble dryers presented a fire risk. They stated that Whirlpool's theory that a large accumulation of lint needs to break off and fall into the heater unit to create a dangerous fire event is credible but may not be the only method by which the lint on the seal can ignite.

The reviewer also stated that the quantity of lint is not the only factor to consider when assessing fire risk, and consideration should be given to issues such as the composition and density of lint, the air flow, and seal integrity amongst others.

The design modifications proposed by Whirlpool comprise several physical alterations, as well as actions required by the field engineers, which they claim work together to address the different fire risk factors. When used in combination, Whirlpool state the alterations and actions improve the seal integrity, restrict air flow through the seal, and physically sweep away lint deposits. The modifications were designed to reduce the overall quantity of lint present, not to eliminate any lint from accumulating on the rear drum seal. Whirlpool did not provide details of any other alternative alterations and actions they had considered when designing the modification.

The test data provided by Whirlpool to demonstrate the effectiveness of its modification design was insufficient on its own to do so. Nevertheless, despite the limitations of the Whirlpool test data, it does indicate that lint build-up at the rear seal is reduced as a result of the modification, and therefore it can be expected that the risk of a tumble dryer catching fire within consumers' homes as a result of lint build-up at the rear seal is accordingly reduced.

Installation programme

As part of the review, OPSS purchased 28 used tumble dryers from online sales sites. It was not possible to verify the history of the machines but 20 of them appeared to have been modified at some point, presumably in consumers' homes. Examination of these machines revealed some discrepancies between Whirlpool's specifications for the modifications and the condition of the machines as found. This included two units that did not have a pin designed to prevent lint accumulation. Because the origin and usage of the dryers is unknown, it is not possible to draw firm conclusions on the reasons why a modification may be outside its specification.

OPSS also reviewed the quality assurance system used by Whirlpool when undertaking the modifications in consumer's homes. Opportunities to improve the system were identified that could provide greater confidence that:

- a. The modification is consistently being installed correctly and as per the specification.
- b. The ongoing integrity of the modification is sustained such that it is performing as intended over time.
- c. There are no unintended consequences resulting from the modification.

Risk assessment and incident data

The incident data provided by Whirlpool relating to breach fires (i.e. fires that breach the dryer unit rather than being contained within it) indicates that modified dryers have a lower rate of such fires than unmodified dryers and therefore, based upon that data, the modification was effective.

As the modification programme only began in September 2015, there is currently limited incident data that demonstrates how the modification performs over the longer term. There is a statutory duty on Whirlpool to monitor their products in use which will help provide data to assess the long-term success of the modification.

Whirlpool does make use of a range of risk assessment techniques, including root cause analysis, at the development stage of a product. However, such techniques are not always applied when changes and modifications are made to products, and this appears to be the case for the particular modification that is the subject of this review.

A risk assessment of the modified dryers was conducted by OPSS with additional support being provided by an external specialist. The assessment used the EU General Risk Assessment Methodology and the RAPEX Guidelines. The inputs to the assessment used Whirlpool incident data.

The risk assessment found:

- For modified Whirlpool tumble dryers in which lint build up facilitates a fire which breaches the appliance and either directly injures someone or through a series of events causes a serious injury or even a fatality, the risk is LOW;
- In similar circumstances where such an event occurs, the risk that one or more persons are injured in such a way as hospital treatment is necessary is LOW;
- In similar circumstances where such an event occurs, the risk that there is property damage to one room/section/flat of a property is LOW.

The review found that Whirlpool's approach to classifying incidents is not always consistent with the conclusions of their investigation, for example a number of incidents have been classified as "cause unknown" where in fact there is a clear indication as to the likely cause. Further, the classification is not always sufficiently specific, for example the classification of "fluff" as a cause of a fire seems to cover a number of potential causes.

Consumer outreach programme

The outreach programme included press advertising, letters and emails to consumers, digital and social media, retailer engagement, print and broadcast media engagement, charity and third-party engagement.

Some aspects of the claims made by Whirlpool are open to challenge, such as the claim that 95% of UK adults have been exposed to the campaign, or the degree to which a resolution being applied to 60% of affected dryers represents success.

Whirlpool research has indicated that 19% of consumers surveyed knew about the modification but did not feel compelled to act. This represents the challenge Whirlpool face and the need for more creative methods.

There remain many hundreds of thousands of unmodified dryers in use and the number of modifications undertaken since around August 2017 has slowed substantially. It is unlikely that repeating the methods used to date to either (a) bring the issue to the attention of consumers or (b) encourage them to take action will have a significant impact.

Therefore, there is a need for the consumer outreach campaign to continue, but the nature of the approach should be reviewed and as necessary modified to achieve greater success.

Mystery shopper exercise

OPSS conducted two mystery shopper exercises, one in May 2018 and a second in June 2018.

In general, there was significant inconsistency in the responses given when separate calls were made to the same retailer, and moreover the correct safety advice was not given in 89% of cases in May, although this reduced to 66% of cases in June. Whilst this shows that improvements were made, it remains the case that in many instances the retailer's customer service representative did not acknowledge a clear safety issue existing and did not engage with the information presented that pointed to a safety concern.

The primary reason for the increase in the correct information being given was due to the improvement in advice provided by Whirlpool themselves. They provided correct information in 29% of calls in May, but this improved to 80% in June. OPSS has since been liaising with the retailers involved, to address the issues highlighted by the mystery shopper exercises.

Outcomes of the Review

As an outcome of the review, OPSS have set out the following requirements that Whirlpool must comply with:

- a. Whirlpool must implement a more rigorous system of quality assurance to ensure that modifications are installed correctly and as per specification. This should include a programme of examinations of dryers that have been used by consumers, which as well as checking the correct installation and ongoing integrity of the modification can also assess the degree to which lint has built-up over time and that there have been no unintended consequences.
- b. Whirlpool must improve its monitoring and management of risk. This should include use of relevant data, such as incident numbers and trends, to monitor the impact of the modification.
- c. Whirlpool must continue its consumer outreach campaign but must also give consideration to revised and alternative methods that may lead to an improved rate of take-up and implement such methods where justified.

In addition to these requirements, the following recommendations are made for Whirlpool to consider:

- a. Whirlpool is advised to review the need for additional research and testing to better understand the issues relevant to fires within its tumble dryers and how the modification is likely to perform over time. Where justified Whirlpool should undertake such research and testing and act according to the findings. The research and testing may need to include (but not be limited to):
 - The quantity of lint, nature of lint, and any associated conditions needed to produce a fire in 'real-world' conditions.
 - The conditions needed for a fire to escalate.
 - Potential ignition methods.
 - The potential for unintended consequences.

- b. Whirlpool is advised to review its approach to risk assessment. As part of that review, Whirlpool should consider whether:
 - There would be benefit in extending the use of risk assessment techniques such as root cause analysis to existing products for which there may be a safety issue.
 - Changes should be made to the approach to incident investigation, with particular reference to the classification of incidents.

OPSS will closely monitor Whirlpool's progress in implementing the requirements and recommendations set out above. Should Whirlpool fail to take the expected action within appropriate timescales, enforcement action would be considered.

ENDS